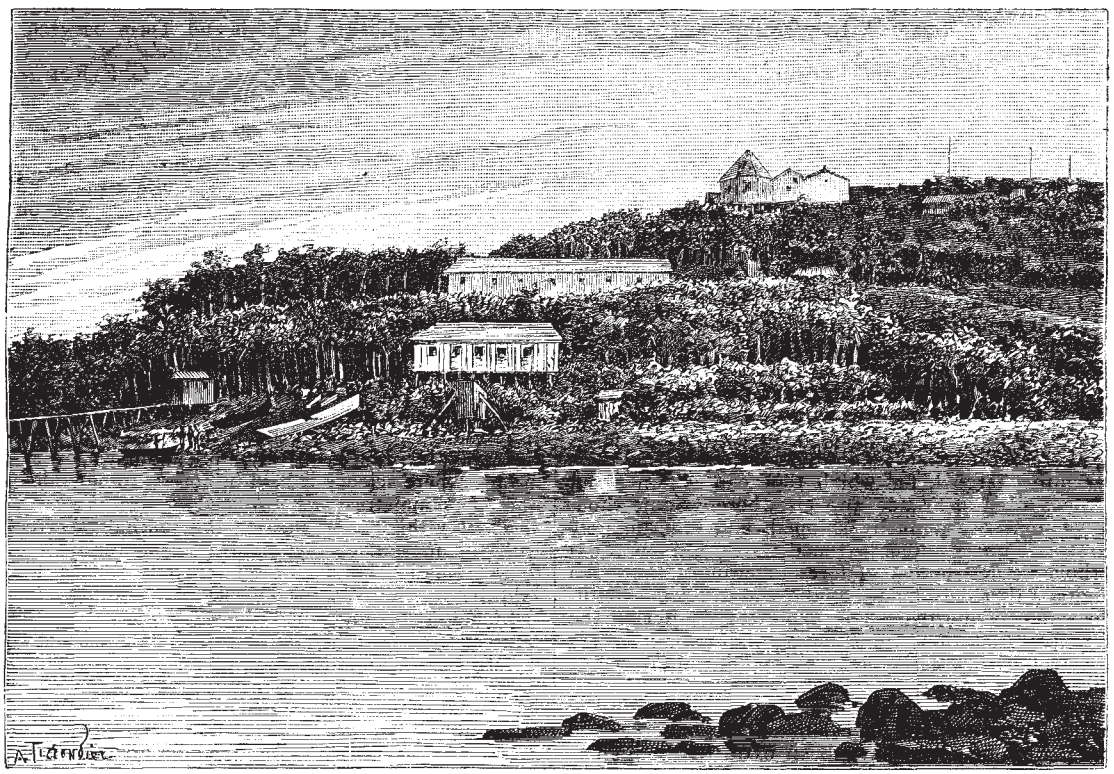
a short communication entitled "Das Problem der Configurationen," by Prof. Reye, of Strassburg. The Editor may be most heartily congratulated on the start he has made: taking everything into account, we have little doubt but that his efforts will be crowned with abundant success.

The most serious difficulty about such an undertaking is that of finance. The *American Journal* began its career with the Johns Hopkins trustees at its back: we suppose, however, that by this time it walks alone. In the present instance, the mainstay is the enlightened King Oscar the Second. Long may he live! The journal is rightly dedicated to him, the dedication being made appropriately in one of the second-rank languages, which it is cheering for us to see, have sometimes their uses.

M. D.

THE FRENCH MISSION TO CAPE HORN

THE members of the French Magnetic and Meteorological Expedition to Cape Horn have taken up their quarters at Crange Bay, and have already begun work. The accompanying illustration, reproduced from *La Nature*, after a photograph transmitted to the Paris Academy of Sciences, will give an idea of the aspect of the station occupied by the expedition. On the summit of the hill are the astronomical cabins, beside which are placed a pluviometer and an actinometer. The large house in the middle distance forms the officers' quarters, while the lower building is for the sailors. Along the shore are other structures partly shown in the illustration, a stockade for the tidal register, and an isolated tent for absolute determinations.



Station of the French Mission to Cape Horn.

The mission arrived at Orange Bay, Terra del Fuego, on September 6 last. They found the country marshy, and were compelled to select a wooded spot in order to obtain firm ground. No time was lost in erecting inclosings and installing the various instruments; and on September 26, the meteorological and magnetical observations were begun. Since the arrival of the party the temperature at Orange Bay has been very mild; the thermometer has never been below 0° C., and several times it has been as high as 16°. The air is very moist, and there has been plentiful rain almost every day, though not lasting long. Squalls have been rare. The magnetic observations will be made partly by instruments which will be read directly,—absolute determinations of declination, inclination, horizontal force, &c., and partly by means of regulating apparatus, which, so far, have worked very satisfactorily, and have given indications agreeing with those obtained from direct-reading magnetometers. The other duties of the expedition consist in astronomical and meteorological observations.

The expedition has been well received by the natives, one of whom speaks and reads English fluently. Indeed, twenty miles off, in Beagle Channel, is an English mission station, which is reported to be very prosperous. On the whole, the French expedition has been very successful; it may be regarded as one of the International Polar Observing Stations.

HEATING BY ACETATE OF SODA

M. A. ANCELIN, Civil Engineer, describes in *La Nature* a method he has devised of heating for domestic purposes, travelling, &c., by means of acetate of soda. His object has been to devise a method that will possess all the advantages of heating by means of hot water, without any of its inconveniences. For this purpose he sought

for a vehicle having a great latent heat of fusion, and after several preliminary experiments, he, in September, 1878, took out a patent for heating carriages, &c., by means of the latent heat stored in solid substances previously liquefied by heat. In the course of his experiments, M. Ancelin's attention was called by M. Camille Vincent to the acetate of soda, the very slow cooling of which during manufacture had struck him. M. Ancelin then experimented with this substance, and obtained satisfactory results. The duration of the heat in a warming-pan with acetate of soda he finds to be four times that of a warming-pan with hot water in spite of the great calorific capacity of water. This is due to the enormous quantity of heat which must be applied to the acetate of soda in order to change it from the solid to the liquid state, a heat which it again gives off as it resumes the solid state. As the result of his experiments, M. Ancelin finds that the quantity of useful heat is in fact four times greater in acetate of soda than in water. A railway warming-pan containing 11 litres of water, in passing from 80° C., the mean temperature at which it is put in the carriage, to 40° the temperature below which the heat is no longer perceptible, disengages 440 calories (11×40). The same pan containing about 50 kilogrammes of acetate, in passing from 80° to 40° disengages 1731 calories instead of 440. Practice is in accord with theory, as may be seen from the curves in Figs. 2 and 3. We see how rapid is the decrease in the temperature of the water warming-pan, while for the acetate pan the curve, at first parallel to that of water, suddenly changes at the point which corresponds to the temperature of crystallisation. The curve then remains almost horizontal, and falls very gently, rendering evident to the eye what takes place inside the pan. We obtain this result at a much less expenditure of heat for the acetate than for water. To raise the pan of water of 11 litres from 10° to 90°, four times, there is required 3520 calories. For the same quantity of acetate only 1987 calories are required, showing a saving of 1500 calories in favour of the acetate. In reality the saving is much greater. In the case of the water-pans raised to 90°, they are only at a maximum of 80° when put in the carriage, and for four heatings we get only 1760 calorics, or 50 per cent. of the heat stored. In the case of the acetate, there are only 256 calories unutilised, or about 12 per cent. of the quantity stored. M. Ancelin claims for his method that it required almost one-half less expenditure of heat than in the case of the usual warming-pans, especially when we consider that the water requires four separate heatings, and the acetate only one. Long journeys can thus be made by rail, say from Paris to Havre, Lyons, Bordeaux, &c., without having to change the warming-pans, a great

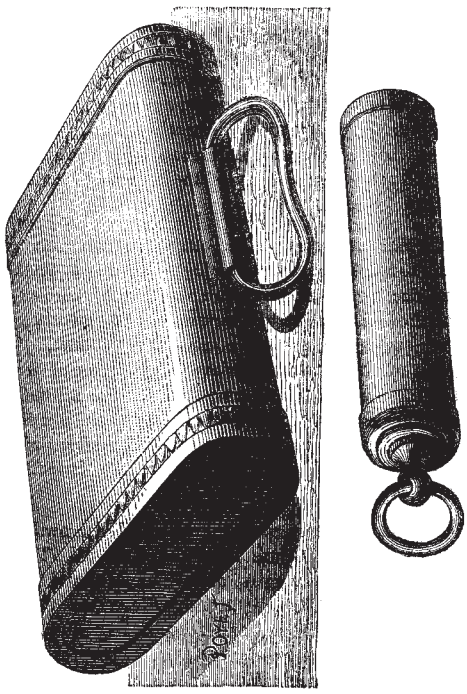


FIG. 1.—Warming-pans with acetate of soda for domestic use; the large form is for apartments or beds, the smaller for a lady's muff.

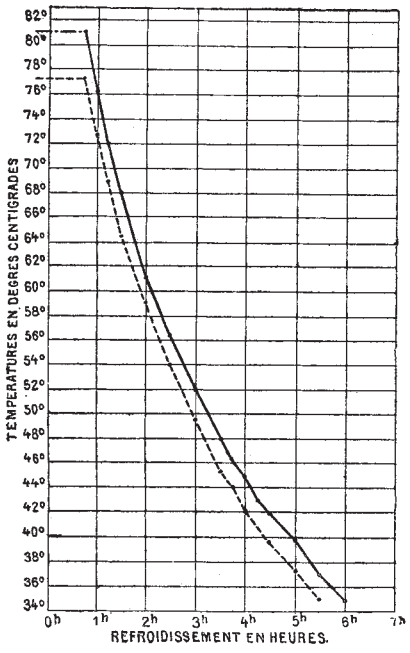


FIG. 2.—Curves of cooling of warming-pans with water.

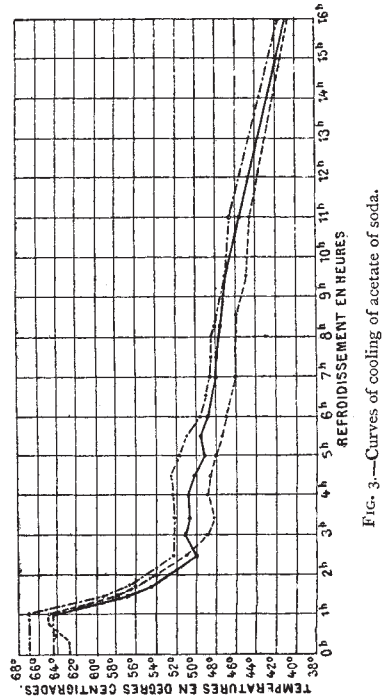


FIG. 3.—Curves of cooling of acetate of soda.

saving of labour and of annoyance to passengers. Several companies both in France and in other countries now employ M. Ancelin's method of heating; the French Western Railway Company use it in their carriages from Paris to Havre, and also to Dieppe. In England, M. Ancelin states, the London and North Western Company had, last winter, 3000 of his acetate pans in use, and double that number during the present year.

He shows that his system may be applied to domestic purposes as well as on railways. It is certainly preferable to charcoal, which, in France, is a fertile cause of death by asphyxia. Fig. 1 shows a portable apparatus, which may be used in private carriages, and even as a foot-pan in bed, and several other purposes, its heat lasting five hours. The smaller figure shows a form of heater which may be used in a lady's muff or even in the pocket. The openings by which the acetate is introduced are hermetically closed, and the substance does not require renewal except at very long intervals. In filling the receptacle certain precautions must be used, which may be easily learned after a little practice. To renew the heat in the pans they have only to be kept in boiling water for half an hour.

NOTES

WE believe that two English observers are being sent out to record the approaching eclipse of the sun, and that the American Government have been asked, and have agreed, to find places for them with the American expedition. M. Janssen will be the head of the French expedition, which will be located on one of the smallest islands of the Caroline Archipelago.

ON the proposition of M. Fremy, the Academy of Sciences will defray, from its own funds, the expense of sending a naturalist with the Eclipse Expedition. The Austrian Government will send to the same station M. Palisa, the director of Pola Observatory.

FOR the two last weeks M. Dumas has been unable to attend to his duties of Perpetual Secretary of the Academy of Sciences. He has been suffering from bronchitis, but we are happy to state that no anxiety whatever is being felt by his friends.

A MATHEMATICAL Society has been founded at Edinburgh, the initiatory meeting having been held in the University on Friday last. Mr. John S. Mackay, M.A., F.R.S.E., Mathematical Master in the Edinburgh Academy, was chosen the first president, and Dr. Knott, secretary. Professors Tait and Chrystal were elected honorary members.

GENERAL PITT-RIVERS has offered his well-known and invaluable collection, now in the South Kensington Museum, to the University of Oxford, on condition that the University provides a suitable building for it. It is to be hoped, for the sake of the University and in the interests of science, that the authorities will accept the collection on the conditions imposed by the generous donor, though we should deeply regret its removal from London.

WE are not surprised that the London School Board should have hesitated last week to commit itself to the importation at once of technical education into elementary schools. The adoption of Dr. Gladstone's motion, that a committee be appointed to consider how best the Board could help in the matter, seems to us to be the judicious course to follow.

THE following premiums are offered by the Society of Arts for the 129th Session of the Society (1882-83):—Benjamin Shaw Prize.—1. A Society's gold medal, or 20*l*., for the best plan for "obviating or diminishing risk to life in the operations of coal mining." 2. A Society's gold medal, or 20*l*., for the best plan for "obviating or diminishing risk to life in the manufacture, storage, and transport of explosives." The Council of the Society leave it to the competitors to bring the plans under their notice in any way they may think proper, whether by model, written description, or otherwise. Howard Prize.—A prize of 100*l*. for the best essay on the Utilisation of Electricity for Motive Power. Preference is to be given to that essay which, besides setting forth the theory of the subject, contains records with detailed results of actual working or experiment. The Society reserves the right of publishing the prize essay. Fothergill Prize.—A Society's gold medal, or 20*l*., for the best invention having for its object the prevention or extinction of fires in theatres or other places of public amusement. Designs, plans, models, essays, descriptions, inventions, &c., intended to compete for any of the above prizes, must be sent in on or before October 31, 1883, to the Secretary of the Society of Arts, John Street, Adelphi, London.

THE Industrial Society of Berlin offers a number of prizes, amongst which we note the following:—1. For a method of precipitating zinc by galvanism from its dilute sulphate solution, 50*l*. 2. For the examination of German crude petroleum, with directions for preparing a good commercial product, 75*l*. 3. For a criticism of the usual indications of the value of iron and a proposal of more useful indications, 15*l*. 4. For a plan of the technical arrangements of a public institute for the examination of tissues, in order to oppose the frequent adulterations met with in textile industries, 15*l*. 5. For ameliorations in salt mines and salt works, 75*l*.

THE Birmingham papers report the Town Hall crowded with working men to hear a lecture from the Rev. W. Tuckwell, Rector of Stockton, near Rugby, on "The Midland Boulders and the Great Ice Age." The lecturer described the erratic blocks of the neighbourhood, and some recent discoveries of boulder clay at Birmingham and Stockton. He presented in a popular form the discoveries and theories of Croll, Geikie, Boyd Dawkins, Lubbock, Evans; and drew a picture of early man and his brute contemporaries as revealed by the bones and implements of the caves and river gravels. The lecture was illustrated by lime-light views of glaciers, extinct animals, and human implements; and was followed on the succeeding evening by a *conversazione* at the same place, when Mr. Tuckwell exhibited and explained to successive crowds throughout the evening a splendid collection of implements, ranging from the earliest palæolithic to the latest bronze ornaments and weapons, kindly lent without charge by Mr. Bryce Wright, of Regent Street. Both evenings were arranged by the Sunday Lecture Society, which provides popular scientific lectures every Sunday night throughout the winter half of the year in the four largest Board Schools in Birmingham, with special lectures in the Town Hall three times in the year. The lectures, as was the case with Mr. Tuckwell's, are frequently marked by a religious, though not by a sectarian tone; and the crowded audiences consist of persons rarely or never seen in church or chapel.

THE Berlin Academy of Sciences is about to send Dr. Lepsius, Professor of Geology at Darmstadt, with an assistant, to Athens, to make a geological survey of the neighbourhood, and endeavour to decide the question of the origin of the Athenian marbles.

UNDER the presidency of Count Hans Wilczek and the Baron Victor Erlanger, an International Electric Exhibition will be held in Vienna, opening on August 1, and closing on October 31. It will be an undertaking of a private nature, but is specially favoured by the Government.

THERE seems to be a serious decline in the once flourishing oyster fisheries of Denmark. Last year only about two million oysters were taken, which is far below the average, nor was the quality so good as usual. There were no new banks discovered during the year. The most important are now those in the Gulf of Vendsel and at Fladstrand.